OVARIOTOMY:

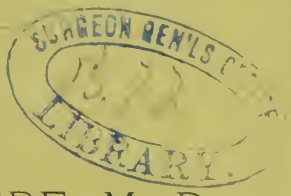
A

CLINICAL REPORT

OF

EIGHT CASES.

Giving a new and improved Method of Treating the Pedicle, with brief remarks upon the Natural History, Diagnosis and Treatment of Ovarian Tumors.



BY

GAYLORD D. BEEBE, M. D.,

OF CHICAGO, ILLS.

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DR. GAYLORD D. BEEBE, 66 RANDOLPH STREET.
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Ovarian Tumors.

It is not the intention of the writer to present an exhaustive treatise on the subject of ovarian tumors, in the few pages which follow, but rather to present a clinical report of a few cases, with some concise practical thoughts, to aid the general practitioner in arriving at a correct diagnosis, and with a view to presenting the most approved method of treatment.

It would seem that there is an increasing predisposition to the formation of ovarian tumors, even after making due allowance for a readier recognition of the true pathology in cases of abdominal enlargement. The causes which lead to the development of ovarian cysts—for I regard the cases as very rare which do not begin by the development of a cyst—may be stated to be such as tend to produce and keep up an engorgement or congestion of the ovaries, and such as retard the rupture of the Graafian follicles. That there is much in the present mode and habits of female life, which tends to keep up an unnatural

engorgement of the reproductive organs, is, unfortunately, everywhere conceded; and it is in this direction, perhaps, that we are to look for an explanation of this increase of ovarian disease.

For the purposes of diagnosis, it is well enough to bear in mind that tumors of the ovaries may be,

1*st*—Fluid,

2*d*— Composite,

3*d*—Solid;

That the fluid tumors may be,

1*st*—Ovarian Cysts,

2*d*—Hydatid Cysts,

3*d*—Cysts of the broad ligaments.

The composite tumors, viz., those which are partly fluid and partly solid, may be,

1*st*—Cystic Cancer,

2*d*—Cystic Sarcoma,

3*d*—Alveolar or Colloid degeneration.

The solid tumors will show the following varieties:

1*st*—Histoid,

2*d*—Dermoid,

3*d*—Pileous,

4*th*—Adipose,

5*th*—Fibrous,

6*th*—Cancerous.

So far as will concern the general practitioner, he may narrow these varieties down to tumors which are FLUID,

and those which are COMPOSITE, or partly fluid and partly solid. The former he may pretty safely regard as

OVARIAN CYSTS; the latter as

CYSTIC CANCER.

The other varieties are met with so seldom, as properly to be left for experts to diagnose.

When an examination of an enlarged abdomen is to be made, the patient should lie upon the back, the thighs slightly flexed, the clothing removed from about the waist, and the abdomen uncovered. If the enlargement be due to the presence of fluid, fluctuation will give a distinct indication thereof; but it should be borne in mind that solid tumors are, in some instances, surrounded by a small quantity of ascitic fluid, which would give a superficial fluctuation, while a pressure carried more deeply, would discover the solid mass, if one exist.

If, then, the enlargement be due to fluid, it becomes next a question whether this fluid is contained in the cavity of the peritoneum, constituting ascites, or is inclosed within a cyst. The differential indications may be ranged side by side.

OVARIAN CYST.	ASCITES.
There will be a prominent roundness of the abdomen, even while lying on the back.	While lying on the back, the abdomen will become flattened, by the fluid gravitating to the sides of the abdomen.

OVARIAN CYST.	ASCITES.
Percussion over the front of the abdomen will give dullness, because the bowels are crowded back by the cyst.	Percussion over the front of the abdomen will give resonance, because the intestines float, and as the posture of the body changes, the lines of resonance will shift about.
Examining per Vaginam.	
Douglass' cul-de-sac will not be found to be pouched out with fluid, unless there exist, also, some ascitic fluid.	Douglass' cul-de-sac will always be found pushed downward by the fluid in the abdominal cavity, and will give to the finger the sense of fluctuation or yielding.
In some instances, the patient will discover the tumor while it is yet small and upon one side.	The accumulation never assumes the form of a circumscribed tumor, but gives a uniform distension of the abdomen.
Menstruation is nearly always disturbed as to regularity ; sometimes too soon, sometimes too late.	Menstruation is not, necessarily, disturbed.
No evidence of disease of the heart, liver or kidneys. Skin is of normal color and moisture.	Nearly always, evidence will exist of disease of the heart, liver or kidneys. Skin, in majority of cases, is of icterode hue and parchment feel.

If the uterus can be outlined, as of normal dimensions, by a digital examination per vaginam or per rectum, and, by the introduction of a sound, can be made to move about independently of the tumor, it may safely be assumed that

the enlargement is not due to pregnancy or to other enlargements of the womb. It should be borne in mind that an ovarian cyst and pregnancy may co-exist, in which case the physical signs of both will be present.

An extra uterine pregnancy might possibly be distinguished by the pulsations of the fœtal heart, which may be assumed to have become audible before the development of a size sufficient to warrant operative interference.

Hydatids within the abdomen, are so rare as scarcely to demand differentiation from the general practitioner, a thing which, in some cases, is only possible by an explorative incision.

By carefully observing these brief hints, the cases are rare in which the medical practitioner will have difficulty in arriving at a diagnosis sufficiently accurate to advise the patient to seek the services of a skillful operator.

It is important, yet not always easy, to determine the presence or absence of adhesions between the tumor and surrounding parts. If the growth of the tumor has been painless, and it is supposed to be a monocyst, there are, probably, no adhesions.

If the abdominal wall can be pushed readily to and fro, sliding freely over the tumor, there are no parietal adhesions; beyond this, little reliable information can be gained by examination.

Treatment.—Upon the subject of the proper treatment of ovarian tumors, it is important that the profession and the public should be kept advised of the rapid progress made in this department of surgery, during the past few years. The writer is persuaded that, in hundreds of cases, persons afflicted with ovarian disease, abandon themselves, and are by their medical advisers abandoned, to a slow and painful, yet certain death, because of the great danger which formerly characterized the practice of ovariotomy. Others, again, submit themselves to a prolonged course of treatment by some physician, who vainly hopes, by medicine administered internally, or by blisters, iodine, or other applications externally, to effect a reduction of the tumor, until the period has passed when an operation would have offered the largest probabilities of success. In yet other cases, medical men have contented themselves with repeatedly tapping ovarian cysts, which, at the best, under this process, have first become multiple, and then, by cancerous degeneration, have hastened the sufferers into untimely graves.

It may safely be stated that there is no efficient treatment for ovarian cysts, other than extirpation. While it is, perhaps, true, that a few cases have recovered in the use of other means, those cases are exceptional, and, followed as guides, will certainly lead to disastrous results. In order to

decide as to the proper time for surgical interference, the natural history of the disease may be briefly considered. It is the belief of the writer that, almost without exception, these tumors, when cystic, begin as monocysts, and, as such, reach considerable size, when, between the layers, so to speak, of the cyst wall, small accumulations of fluid begin, which, increasing, distend into secondary cysts. These begin near the pedicle and rapidly increase in size, while, at the same time, they multiply in number; some pushing into the major cyst cavity, are hence termed endogenous, while others, pushing rather outwardly, are termed exogenous. This matter of direction, in the development of the secondary cysts, whether interiorly or exteriorly, may be regarded purely accidental and should not be made the basis of classification into varieties, for, indeed, in any given case, one may expect to see this development in both directions at the same time.

It will be further noticed, that the fluid contained in these secondary cysts is much more highly charged with coagulable material than that contained in the major cyst; and, as the multiplication goes on, the later formed cysts contain a fluid still richer in these plastic elements, until, at length, their contents cease to be fluid, and are either gelatinaform or cerebriform. This degeneration is, doubtless, due to the fact

that, with the multiplication of cysts, there is a diminished nervous supply, in consequence of which, the exudation elements fail to reach organic development, and either remain in solution (suspension) or, in the more advanced stages of cyst multiplication, undergo a cerebriform degeneration, giving us the cystic cancer, so frequently met with in advanced cases.

In studying the growth of these tumors, it is interesting to note how nature seeks to make up for this deficient enervation by establishing other channels of supply by means of adhesions between the tumor and surrounding parts, and parts, too, which have the largest vascular and nervous supply. Unable, however, to correct the perverted histogenesis, these fresh supplies, always more vascular than nervous, only increase the activity of the disease and hasten forward the crisis. This abnormal cell activity kindles up an irritative fever which, by impairing the tone of the general nervous system, ends in exhaustion, and the patient dies.

Occasionally we meet with a monocyst, which, after enlarging to a given size, will cease to grow, or, indeed, to change perceptibly, and thus remain for many years; but such cases are infrequent, and even they are liable, at any time, from some exciting cause, to pursue the course which most do from the outset. I have, in my cabinet, a dried specimen of a cyst, which I removed, after seven or eight years'

growth, and which had, apparently, just commenced to develop the secondary cysts. One is shown of the size of an orange, springing from the major cyst wall, while scores of others could be seen, just beginning to accumulate fluid, and varying in size from that of a pea to that of a millet-seed. The lapse of a few weeks would have transformed this into a poly-cyst, which would, in all probability, have shown cancerous degeneration.

Viewed in this light, it becomes the duty of the medical man to advise the extirpation of an ovarian cyst so soon as it shall have reached a size sufficient to exert any considerable pressure upon the surrounding viscera. Beyond this there is no safety in allowing them to remain, and there is, practically, no hope of relief in any other direction. He should even advise against tapping, unless under the pressure of circumstances, for temporary relief, because it delays an efficient remedy, and because the operation of tapping is not free from hazard, since out of 216 recorded cases treated by tapping, 41 died within a few days after the first operation. If the following cases, herewith reported, can be taken as any guide, the mortality from ovarian operations, when not too long delayed, may be reduced to a very small percentage; and hence, ovariotomy, if skillfully practiced, may be resorted to with very little hesitation.

Ovariotomy was first performed, as a surgical undertaking, by Dr. Ephraim McDowell, of Kentucky, in the year 1809, and since that time, a great deal of attention has been bestowed upon the subject, by surgical writers, the interest mainly centering upon the proper treatment of the pedicle. Without attempting to review the ground gone over in the various modifications and improvements which have been advocated or practiced, I shall give in these pages what is, perhaps, the latest modification—and what may prove to be a very decided improvement in the treatment of the pedicle—in which both the ligature and the clamps, hitherto deemed essential, are entirely abandoned, and the vessels divided in the operation are secured by torsion. It may be claimed for this method,

That it enables the operator to restore the abdominal viscera to a nearly normal position ;

That it avoids the presence of any foreign substance within the abdomen ;

That it allows the absolute closure of the abdominal incision, even to the exclusion of atmospheric air, and allows it to remain so closed till from ten to fourteen days have elapsed, and union has become firm ;

That torsion of an artery, if it fails at all, will fail upon

the operating table, where it can be immediately remedied, and, under its use, secondary hemorrhage is unknown ;

That, if the viscera are not put upon the stretch, or displaced, if no foreign substance be within the abdomen, if the incision be well closed, and no secondary hemorrhage occur, there exists but a very slight danger of peritoneal inflammation, and recovery may confidently be expected.

Accordingly, it will be observed that, in the eight cases here recorded, no death has occurred which could be traced to the operation ; and though cases one and two died within a few weeks after the removal of the tumor, the death was clearly due to malignant disease attacking important viscera ; and between the operation and the fatal termination, a period of comparative comfort and relief intervened. It was noteworthy, too, how comparatively free the patients were from suffering, after the operation. In no case was opium administered to procure sleep, and several of them declared that they suffered no pain during their entire convalescence.

CASE I.

CYSTIC CANCER, RIGHT OVARY—THRICE TAPPED—TUMOR REMOVED—PEDICLE LIGATED WITH CARBOLIZED CAT-GUT, OTHER VESSELS, INCLUDING SEVERAL BRANCHES OF THE MESENTERIC ARTERY, SECURED BY TORSION.

The patient, residing in Chicago, was an American, married, aged 41, and had been treated, for about a year, for "abdominal dropsy." Deriving no benefit from this treatment, the case was placed in the hands of my esteemed colleague, Dr. G. W. Foote, by whom she had been once tapped, and on June 7, 1869, I was requested to see the patient, with a view to repeating that operation. Upon an examination of the case, it was found to be a cystic tumor of the right ovary, and, by firm pressure, hard, nodular masses could be felt in the deeper portions of the cyst. Four gallons of fluid were withdrawn, and a closer examination of the solid masses induced the belief that a cancerous degeneration had already begun. The patient was advised of the presence of a tumor, and ovariotomy was advised. The patient was not prepared for such a diagnosis, and still less prepared to adopt the recommendation of an operation.

August 22d, 1869, at the request of Dr. Foote, I again tapped the patient, withdrawing three gallons of fluid. Since the previous operation the solid masses had rapidly increased in volume, and at points gave fluctuation. The apprehension of malignant disease was expressed and an early resort to ovariotomy was urged.

September 19th, 1869, I was again requested to see the patient, who was now urgent for the removal of the tumor. The pulse was now 126, and the countenance indicated a marked cachexia. The solid masses seemed to fill the abdomen, and, with the indications of cancerous degeneration, the operation offered little, if any, hope of prolonging life, and no prospect of effecting a cure. Still, with this discouraging expression, an operation was desired, and finally consented to.

September 22d, 1869, assisted by Drs. G. W. Foote, A. G. Beebe and L. Pratt, ovariotomy was performed. A high temperature of the room was secured and a supply of artificial serum was provided, as advised by some writers, both of which precautions I have ever since abandoned as altogether useless, if not worse than useless. The patient being fully under the influence of Squibbs' chloroform, an incision of four inches was made into the abdominal cavity, which allowed the escape of several ounces of ascitic fluid; then, by means of the large trochar of Spencer Wells, sev-

eral cysts were emptied, the incision was increased to seven inches and several strong adhesions were severed. One of these adhesions involved a portion of the mesentery, and its division involved several of the mesenteric branches, which were severally seized and closed by torsion, as were also the vessels traversing several other visceral and parietal adhesions. The mass was now turned out, and the pedicle, which was one inch in diameter, short and thick, was secured by a single ligature of carbolized cat-gut, the ends of which being cut short, the stump was returned within the abdomen. Having carefully cleansed the peritoneal cavity of all blood and coagula, the incision was closed by quilled sutures of silver wire, and over these was applied a thick layer of scraped lint saturated with carbolic oil. The patient reacted only moderately well, the pulse remaining very rapid and somewhat more feeble than before the operation, for two days. On the third and fourth days there was some indication of peritoneal inflammation, which subsided under treatment, after which the pulse declined to 100 to 108, the appetite improved and the patient gained considerably in strength and appearance till the fifteenth day. From this time on, it became more and more apparent that cancerous disease had attacked the other viscera ; the patient rested

badly, the pulse grew more frequent, the appetite failed, and death from exhaustion at length closed the history of the case.

An examination of the tumor showed a cerebriform mass interspersed with cysts of varied size and contents, and through it all, an abundance of cancer cells. There is little doubt that, had this case been operated upon in June, and the operation followed by the administration of carbolic acid, as in cases three and five, a result equally favorable might have been obtained.

CASE II.—Polycystic tumor of left ovary, cancerous degeneration—vessels of the pedicle and of adhesions closed by torsion.

The patient, an American, married, aged 49, resided at La Crosse, Wis., where I visited her, at the request of Dr. L. E. Ober, October 19, 1869. The abdomen was greatly distended by a tumor containing numerous cysts, through the walls of which could be felt irregular solid masses. As a preliminary operation, the major cyst cavity was tapped, and three gallons of fluid drawn off, which, in appearance and consistence resembled stationer's mucilage. A more careful manipulation of the mass was then made, which appeared to be a cancerous degeneration of a multi-

locular cyst of the left ovary. An unfavorable prognosis was given, and the opinion was expressed that an operation would not prolong life. Notwithstanding this, the patient strongly desired an operation, and accordingly it was performed upon the same day. An incision of three inches revealed the flaccid cyst, which had been emptied by tapping, and, through this, some other cysts were emptied. Numerous adhesions were discovered, and, the more readily to break them up, the incision was enlarged to ten inches. It then became apparent that the tumor had become strongly adherent to the parietes, to the colon, omentum, and even to the peritoneal investment of the liver. With considerable difficulty, these were at length all detached, and, by increasing the incision to eleven inches, the mass was turned out. The pedicle, which was very short and thick, was divided with the scalpel, and the vessels traversing it seized and twisted. In like manner the vessels traversing the larger bands of adhesion, were closed. Some diffused oozing was arrested by the application of ice, and, when the peritoneal cavity was well cleansed, the incision was closed by quilled sutures of silver wire, and a surface dressing of lint, saturated with carbolic acid.

The patient was a little over two hours under the influence of chloroform before this operation was completed, but

reacted well, and four hours after the operation, was quite cheerful and comparatively comfortable. On the fourth and fifth days some tympanitic distension of the abdomen occurred, and there was some vomiting; but, with this exception, the case progressed favorably for about three weeks. It then became apparent that the bladder and rectum were involved in a redevelopment of cancerous disease, and the patient at length died of exhaustion. It is uncertain how far carbolic acid, if administered, might have held in check the cancerous tendencies in this case, but it is to be regretted that it could not have been fully tested. Matter of a cerebriform appearance was freely interspersed between and within the cysts of the tumor, in which the microscope discovered an abundance of the characteristic cells.

These two cases, while they give a result in no wise improved by operative interference, still served to test the efficiency of torsion, as applied to the operation of ovariotomy, and gave a warrant for its use in a more hopeful class of cases. Taken as samples of an advanced stage of the disease, they teach the danger of delay in seeking operative interference, in cases of ovarian cyst.

CASE III.—Polycyst of right ovary, cancerous degeneration begun—pedicle unusually large—vessels closed by torsion—recovery.

The patient, an American, unmarried, aged 23, resided at Champaign, Ill. She had observed the growth of a tumor for nearly two years, first making its appearance in the right iliac fossa, and by degrees rising to occupy the entire abdominal cavity. Of late, the symptoms had become urgent, and relief was sought. An examination, made July 26th, 1870, discovered a major cyst, through the wall of which could be felt, on firm pressure, nodular masses, which indicated the formation of secondary cysts of somewhat recent origin. An immediate resort to ovariotomy was advised, and, accordingly, at once performed, Drs. Cheever and Howard, of Champaign, assisting. The patient having been fully anæsthetised with chloroform, an incision of three inches was made into the abdominal cavity, from which a few ounces of ascitic fluid escaped. The diagnosis having been verified, the incision was increased to five inches, and a large adhesion found to exist between the tumor and the omentum. This having been detached, the fluid was drawn off from the major cyst cavity, and from several of the smaller cysts. Some of these smaller cysts contained a fluid so thick and tenacious as not to flow through the canula of Spencer Wells. The

mass was, however, so far reduced as to be turned out through the incision, and the pedicle sought for; this was found to consist of the entire broad ligament, in a greatly hypertrophied condition; and, when divided, the cut surface had a triangular shape. The base of the triangle, corresponding to the margin containing the Fallopian tube, was fully an inch in thickness, while it was four inches from the base to the apex, or, in other words, the pedicle was four inches broad and an inch thick at its Fallopian margin. This pedicle was traversed by a large number of vessels, which were picked up, one by one, and closed by torsion; so, also, were the vessels divided in detaching the omental adhesion, and, when all oozing was arrested, and the abdomen cleansed, the stump was returned to the abdominal cavity, and the incision was closed by interrupted suture of silver wire, and dressed with lint and carbolic oil, as in the other cases. An examination of the tumor showed numerous secondary cysts springing from the parent cyst, interspersed among which was considerable medullary matter, which, under the microscope, showed abundant evidence of medullary cancer. The patient was, therefore, ordered to take, in addition to the regular treatment for combating inflammation, four full doses of carbolic acid each day, and to continue this remedy for two or three months.

The patient reacted well; after the operation, no inflammatory symptoms developed, and the case progressed to a full recovery, no indications of cancerous redevelopment being apparent as yet.

The history of this case, and a careful inspection of the *materies morbi*, clearly indicate that the tumor began as a monocyst of the ovary; that, when the secondary cysts developed, the tendency to cancerous degeneration rapidly followed, and delay in extirpation would have insured the same termination in this as in cases one and two. With such evidences before him, it is the duty of the surgeon to advise an early extirpation of ovarian cysts, while, as yet, malignant degeneration has not added its fearful hazard to the case.

CASE IV.—POLYCYSTIC TUMOR OF LEFT OVARY, WITH CANCEROUS DEGENERATION—ALMOST UNIVERSAL ADHESIONS—TORSION OF BLOOD VESSELS—RECOVERY.

The patient, an American, unmarried, aged 25, residing at Dixon, Illinois, was visited September 13, 1870. She then stated that about eight months before, she had observed a tumor occupying the central portion of the abdomen, and as its size continued to increase, a physician was summoned, who diagnosed the case as one of "incarcerated wind,"

and, for a period of five or six months, endeavored, by various expedients, to liberate the pent up gases. At the end of that time the patient was seen by Dr. J. A. Steele, of Dixon, who diagnosed ovarian cyst. The abdomen was now of the size of a pregnancy at term, very red and very hot over the entire surface. Fluctuation indicated the presence of fluid, but firm pressure disclosed hard, nodular masses filling the cyst to a considerable extent. The abdominal parietes could not be made to slide over the tumor in any direction, and the whole surface was sensitive to contact. The pulse was feeble and 130 per minute. The stomach had, for some time, rejected all solid food, and the high degree of constitutional disturbance had well nigh prevented sleep. There was every indication of a cancerous degeneration of a polycystic ovary, which had nearly reached a fatal termination, and a corresponding opinion was expressed to the friends of the patient, who were anxious to know what possible hope an operation now offered. They were informed that though there was a remote possibility of the patient surviving an operation, and, while it was not impossible that she might recover, yet she would probably die on the operating table. The mother and father at once expressed a preference that the operation should be made, and, in this

preference, the patient, who was a young lady of great culture and refinement, shared. Accordingly, she was placed immediately upon the table and chloroform administered. I had, during the operation, the assistance of Drs. Steele and Phillips, of Dixon, and Dr. Gordon, of Sterling, Illinois. In making the incision, it was difficult to determine when the peritoneal cavity was reached, so dense and close were the parietal adhesions. The fingers were, however, gradually insinuated, and the adhesions, which were recent, though well nigh universal, were broken down and the major cyst, with some of the larger secondary cysts, were emptied of fluid contents. It was now found that the visceral adhesions were also very extensive, but, being recent, were not very firm, and, with care were all detached. The mass was turned out and the pedicle found to be upon the left side, very small, being but little more than the Fallopian in a hypertrophied condition; this was divided without ligature, and almost without bleeding. The adhesions severed were traversed by numerous vessels requiring torsion, and, until they were closed, the hemorrhage was profuse. The entire peritoneal surface was very vascular, presenting a miliary or granular appearance, and, where adhesions had been broken up, the blood had extravasated till the whole inner parietal

surface looked as if covered by sphacelated tissue. The abdomen was hastily cleansed of fluid and clots, and the incision closed; for, already, the patient was nearly pulseless and very cold. She was removed to bed and surrounded by hot bottles and blankets, and made to inhale the vapors of ammonia. So soon as she had reacted enough to swallow, a mixture of equal parts of beef-tea and brandy was given, at intervals of fifteen minutes. Every moment the shock became more profound, the surface of the body, and finally of the face, became cold, shriveled, and bathed in a profuse, sticky perspiration; so profuse indeed that the surface could not be wiped dry. Brisk frictions were maintained, without interruption, especially of the extremities, and at length, after six hours of persistent use of all these expedients, reaction feebly began, a little warmth being first discoverable on the forehead. At the end of another hour the surface of the body and extremities was dry and warming, the voice was again audible, and the terrible suspense was over. From that time on, her recovery was uninterrupted. The carbolic acid was administered internally, as in case three, and now, at the end of six months, her health is good and there are no evidences of cancerous redevelopment.

The mass was examined microscopically and medullary

cancer cells found to be present in abundance. This case may certainly be regarded a triumph of surgery over very adverse circumstances, and broadens, somewhat, the range of admissibility of ovariotomy.

CASE V.—Monocyst of left ovary—pedicle composed of a bundle of blood vessels, surrounded by loose connective tissue—vessels secured by torsion.—Recovery.

The patient, an American, unmarried, aged 21, resided at Portage City, Wisconsin. The tumor had been felt, in the lower part of the abdomen, four and a half years before; its growth had been painless, or nearly so, and very gradual. There had been a tendency to irregularity in the recurrence of the menstrual period, during the past five years. In size, the tumor is now as large as a gravid uterus at seven months. Fluctuation is so constrained as to suggest the possibility of a colloid formation, but, as the history of the case was inconsistent with such an hypothesis, it was diagnosed a monocyst of the left ovary, and its removal advised. October 25th, 1870, I visited Portage City for the purpose of removing the tumor, and assisted by Drs. E. C. Main and C. A. Kellogg, of

that place, the patient was brought under the influence of chloroform, an incision of three inches made through the abdominal wall, and the tumor found to be free from adhesions. The incision was then increased to four inches, the cyst emptied by means of the large canula, and withdrawn. The pedicle, which was upon the left side, consisted of a bundle of blood vessels in loose connective tissue, and was irregularly rounded and about an inch in diameter. This was slowly divided, each vessel being twisted as soon as cut, seven arterial branches being thus secured, and, when on inspection no further bleeding occurred, the stump was allowed to slip back into the abdomen. Having carefully cleansed the cavity, the incision was closed by interrupted silver suture, with the surface dressing used in the other cases. The patient reacted well, the pulse rising to 110, with some feverish excitement during the ensuing twelve hours. During the night, menstruation began with relief to febrile symptoms, the pulse declined gradually, reaching the normal standard after two or three days, and without any further symptoms worthy of note, the case progressed to a complete recovery. March, 1871, the patient reports that though not quite as strong as before the tumor disabled her, her health is very much better than before the operation. It may be remarked that the occurrence of menstrua-

tion, soon after an ovarian operation, is usually attended by a marked abatement of feverish symptoms, at least such has been the observation in several instances, and it may also be assumed that the security or safety of torsion is thoroughly tested by the condition of hyperæmia attending the menstrual function.

CASE VI.—Monocyst of the right ovary, of over six years' growth—pedicle six inches broad—highly vascular—vessels closed by torsion—recovery.

The patient, an American, married, aged 37, resided at Grand Detour, Ill. When visited, January 18th, 1871, she gave the following history. The enlargement of the abdomen was first noticed something over six years before, when it seemed to her to be a general enlargement, no circumscribed tumor being perceptible. Since that time she had given birth to two living children, at term. After the birth of the second, which is now seventeen months old, the tumor enlarged more rapidly than formerly, and has now reached the size of a gravid uterus at eight months. A careful examination resulted in the diagnosis of a monocyst of the left ovary, no adhesions being discoverable. The patient desired an immediate resort to ovariotomy,

and, accordingly, she was placed at once upon the table. Chloroform was administered and, assisted by Drs. A. G. Beebe, of Chicago, J. A. Steele and S. S. Smith, of Dixon, an incision of three inches was made through the abdominal wall, the absence of adhesions demonstrated by exploration, the cyst emptied of its contents by the large canula and the empty sack withdrawn. The pedicle was found to consist of the entire right broad ligament, which, though quite thin, was more than six inches broad and traversed by a large number of considerable sized blood vessels, the veins being very large and tortuous. Severing a portion of the pedicle at a time, the vessels were seized and twisted as soon as divided, the venous branches proving the more difficult to close, and, indeed, consuming considerable time before all oozing had ceased. When, at length, all were secured, the pedicle was returned to the abdomen, the cavity cleansed of all fluids and coagula, and the incision then closed by interrupted silver suture, with the surface dressing of lint and carbolic oil, retained in place by a few strips of adhesive plaster. The operation occupied a little over two hours, but the vigor of circulation was well sustained throughout, and the patient reacted promptly, with no indication of shock. During the ensuing four hours, the pulse did not rise above 72. On

the day following, the pulse was 80; the patient had passed a comfortable night and was animated and cheerful. On the second day, menstruation came on, and, without further suffering or unfavorable symptoms, the patient made a rapid and complete recovery. In this case, as in case four, the after treatment was very skillfully conducted by Dr. J. A. Steele, of Dixon.

The cyst, upon inspection, showed the incipient formation of numerous secondary cysts, developing within the major cyst wall, one of which had reached the size of an orange, the others being much smaller. The fluid contained in the smaller cyst, was found to differ very widely in character from that in the major cyst, being so highly albuminous as to become quite solid on the application of heat.

CASE VII.—Monocyst of the right ovary, complicated with chronic corporeal metritis, with frequent and prolonged hemorrhages.

The patient was an American, tall, spare, aged 48, married and the mother of several children, the youngest being seven years old. In February, 1870, she first observed that her form was enlarged, but the enlargement seemed to

occupy the entire abdomen, and she was never able, herself, to recognize any circumscribed tumor. In March, 1870, she began to have spells of flowing, the menses having ceased at the age of 45. During these spells of flowing the hemorrhage was never very active, but kept up a constant show, which, on some days, would hardly require a napkin, at others, requiring two or three per day, and these spells lasted two or three weeks at a time. December 17, 1870, I visited the patient, at Toledo, Ohio, and made an examination, which disclosed the presence of a cystic tumor of the right ovary, and a highly vascular state of the uterus, which was considerably enlarged and not very freely movable. Immediate extirpation of the tumor was advised, lest, by further growth, it might assume a cancerous degeneration, of which the uterus might partake.

After considerable deliberation and delay, an operation was decided upon, and, accordingly, performed February 16, 1871, the following gentlemen being present and assisting: Drs. S. S. Lungren, E. P. Gaylord, S. Bailey, A. E. Scheble, A. W. Barlow and Mr. Frank Waller, of Toledo, and Dr. J. B. Massey, of Sandusky. The patient's bowels and bladder having been evacuated, she was placed under the influence of Squibb's chloroform, and an incision made

of three inches in length. As no adhesions existed, the large trochar was plunged into the tumor and about 16 pounds of a straw colored fluid withdrawn. The empty cyst was then turned out. The pedicle was found to be fully six inches broad, quite thin and, at the margin corresponding to the Fallopian tube, very short. When, however, it was put upon the stretch, it gave the appearance of greater length than really existed, and, beginning at the opposite edge, the pedicle was slowly divided, each arterial branch being twisted as soon as divided, until the Fallopian margin was reached. This presenting no considerable vascularity, was divided close to the cyst wall and one or two arterial twigs secured by torsion, when it was observed that a considerable oozing of venous blood continued. The attempt to apply torsion to these vessels only seemed to open up more of them, and, the retraction of the tissues leaving a pedicle less than one line in length, it became apparent that the oozing was from the uterine sinuses, the walls of which seemed very friable and over-distended with dark colored blood. Pressure seeming to avail nothing, ice was applied; and, when this proved ineffective, the actual cautery, but still the oozing kept up. Carefully isolating the points from which the blood escaped, a minute quantity of the powdered persulphate of

iron was applied to these points, with firm pressure, and the flow was measurably arrested. So tender were the tissues, however, that it was not deemed safe to trust to this expedient, and, accordingly, the peritoneal margins, which had retracted from the pedicle, were approximated by four interrupted sutures of silver wire, drawn sufficiently firm to arrest, by pressure, any farther oozing, and the stump was then returned to the abdomen. These delays had prolonged the operation to about three hours, during which the patient showed no unfavorable symptoms, and reacted with no evidence of shock. The pulse did not rise above 80, during the 48 hours following the operation; the patient felt but little pain, partook of food, and had considerable sleep. With no unfavorable symptoms, this case progressed to full recovery.

CASE VIII.—Monocyst of the right ovary of over three years' duration—twice tapped—removed and pedicle treated by torsion—recovery.

The patient was an American, aged 30. Had been married, but never pregnant. She stated that some three years ago a female friend had called her attention to an apparent enlargement of the abdomen, which had not previously attracted her attention. She could not then detect any

defined tumor, but a general enlargement which continued to increase until October, 1869, when she was tapped. The fluid accumulated again, and in June, 1870, she was again tapped, and a small quantity of iodine was thrown into the cyst. After this, the accumulation was somewhat slower, and when now examined, Feb. 17th, 1871, the cyst does not appear to be filled to distension, though herself so large and clumsy, as to be unable to pursue her usual occupations. The diagnostic features of the case were well marked, the uterus healthy, and having diagnosed a mono-cyst of the right ovary, an operation was advised before any unfavorable complications should develop. Accordingly an operation was performed on February 18, 1871. The following medical gentlemen of Toledo were present, and assisted: Drs. S. S. Lungren, E. P. Gaylord, S. Bailey, A. E. Scheble, and Mr. Frank Waller. The patient having been anæsthetised with chloroform, an incision of four inches was made, and the tumor ascertained to be free from adhesions. The fluid was then evacuated with the large canula of Spencer Wells, and the empty cyst withdrawn. The pedicle was found to be almost an exact duplicate of the one in case seven, save that it was about one inch longer. The cyst wall was very dense and thick. Care was taken to get ample length of pedicle, by cutting well into the

cyst wall. The vessels encountered were twisted as soon as divided, and though in the case of some of the larger venous branches, considerable time was required to accomplish an entire arrest of all oozing, a little perseverance conquered, the stump was dropped back into the abdomen, and the wound was closed here as in case seven, by interrupted silver suture with a surface dressing of lint saturated in carbolic oil. Some prostration had begun to show itself at the close of the operation, but external warmth and a few inhalations of ammonia vapor, restored the circulation, and the patient reacted well, without getting a pulse ranging higher than 96 during the ensuing twelve hours. At the end of this time, vomiting set in, with considerable feverish excitement, and this symptom persisted through two days, greatly harassing the patient, and followed by considerable prostration. Under treatment, this symptom subsided on the evening of February 20th, it seeming to have been produced by the anæsthetic. From that time on, the case progressed favorably to full recovery. The after treatment of this case, and of case seven, was conducted by Dr. Lungren, of Toledo, whose skillful management left nothing to be desired.